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No mention is made, for example, of the classical studies by Gilbert upon shore action. The contention of Dr. Cornish that pebbles along the shore are reduced in size mainly through fracture, and not by attrition, must meet the objection that shingle beds reveal few fractures and almost uniformly present watch-shaped individuals; as it must also meet the known fact that pebbles are lifted but slightly in their movements and cushioned by the water during impact.

The work is concluded by interesting chapters upon the waves of rivers, including bores, curious results of the meeting of waves from different directions, etc. The forty-nine plates which adorn the work are of interest, and, like the letter press, they are a credit to the publisher.

William Herbert Hobbs.

The name of Vaughan Cornish has been identified for many years with the study of waves. In geographical sciences he is the specialist on this subject. His book is therefore full of personal observations. Cornish did not gather the facts as they came. He has crossed the oceans many times in order to observe himself all the particulars of the stormy sea, he has spent weeks and months at seashores, at Niagara and other water falls, at rivers, canals and lakes, always observing, always thinking of one thing: the waves.

Cornish has the critical mind of a well-trained scientific man, he has the enthusiasm of a lover of nature and he never leaves the ground of observed facts in favor of logical reasonings leading to sensational theoretical generalizations. In order to verify his reasonings he prefers to consult nature.

The present book consists of three parts: in the first Cornish studies the size and speed of deep-sea waves; in the second he treats the subject of the action of sea waves to transport shingle, sand and mud, and in the third he gives a good deal of information on stationary and progressive waves in rivers. The illustrations are excellent, the style is good and the book is pleasurable reading. Tourists crossing the ocean will be benefited by reading this instructive guide. The book ought to be in every library on transatlantic steamers.

Henryk Arctowski.

MATHEMATICAL GEOGRAPHY AND CARTOGRAPHY.

Plane Surveying. Text and reference book for the use of students in engineering and for engineers generally. By Paul C. Nugent. 3d edition, revised. xxii and 599 pp. Diagrams, index. John Wiley & Sons, New York, 1911. 9 x 6.

Topographic, Trigonometric and Geodetic Surveying, including geographic exploratory and military mapping. With hints on camping, emergency surgery and photography. By Herbert M. Wilson. 3d edition. xxx and 912 pp. Maps, ills., index. John Wiley & Sons, New York, 1912. $3.50. 9 x 6.

New astronomical tables, extending through 1928, have been added to the last edition of the first of these two books. Another innovation consists in the replacing of Appendix C on the "Restoration of Lost or Obliterated Corners" by the latest revision of the circular on this subject issued by the U. S. General Land Office, which refers to the entire subject of resurveys.

The third edition of the second book differs little from the previous two issues. A few minor changes and corrections occur occasionally.

Both works still retain their high rank among similar publications in the United States. Although the first is avowedly destined for the use of students in engineering, or for engineers alone, it may well find a useful place in a geographer's library. The study of the subject-matter of the second being part of a geographer's training, it is not amiss to state that familiarity with its contents is indispensable to followers of this science. Topographers, geodesists and cartographers will find in it practically all the information needed for their work.

Leon Dominian.

Determination of Time, Longitude, Latitude and Azimuth. By William Bowie. 5th edition. 177 pp. Ills., index. *U. S. Coast and Geod. Surv. Special Public No. 14.* Washington, 1913.

This is the fifth edition of the astronomical manual published by the U. S. Coast and Geodetic Survey for the use of its observers in the field and its computers in the office in carrying on geodetic astronomy. The subject matter includes much that was printed in the fourth edition, which appeared as Appendix 7 of the Report of the Superintendent of the Survey for 1898.

Some of the most important additions to the previous edition are: the determination of time and longitude, using the transit micrometer; the description of the transit micrometer; determination of time with the vertical circle for use in connection with azimuth observations; a description of the method of observing azimuth coincidently with horizontal directions in primary triangulation; an example of the determination of an azimuth in Alaska with a transit equipped with a transit micrometer; examples of the records and computations in the different classes of work, as actually made at present by the Survey; and statements of the field cost of the different classes of work. There are also shown a number of new illustrations and several tables which were not given in the previous edition.

The derivation of the formulæ is given only in the rare cases where they cannot be found in the standard text books on astronomy. In addition to this manual the observer will require the American Ephemeris and Nautical Almanac for the year of observation, in time and azimuth work, and the Boss Preliminary General Catalogue and the Cape Tables by Finlay, in latitude determinations. Of course, other catalogues and tables of a similar nature may be used instead of the publications mentioned.

The examples shown in the different classes of work are carried from the observations through the steps in the computation to the probable error of the results. Sufficient explanation is given to enable one to understand the various processes.

The instructions given in the manual for the several classes of work state what degree of accuracy is required for the results. The manual is especially intended for use in field astronomy, as carried on by the U. S. Coast and Geodetic Survey, but it may also serve as a guide to any one engaged in geographical explorations who does not require such a high degree of accuracy as that maintained in the work of the Survey. WILLIAM BOWIE.

PHYSICAL GEOGRAPHY

The Work of Rain and Rivers. By T. G. Bonney. Cambridge Manuals of Science and Literature. 144 pp. Ills., index. G. P. Putnam's Sons, New York, 1912. 40 cents. 6½ x 5.

Dr. Bonney's little work does not profess to instruct the professional student, but is fitted to interest the general reader concerning some of the more common changes produced upon the surface of the lands. The headings of the five chapters convey a true notion of the content of the volume. They are: Carving and Carrying; The Making of Valleys; The Transport and Deposit of Materials; The History of a River System; Man's Learning of Nature's Lessons.

The author, as might be expected, reveals somewhat conservative views on certain subjects, such as the origin of cirques and hanging valleys, but he avoids controversy. Concrete examples of the phenomena treated are abundant and offer useful material to the teacher. Frequent references to localities in Great Britain and Switzerland bespeak the author's prolonged familiarity with those countries. There are a number of diagrams and half tones. The photographs used deserve a much better reproduction than they have received.

A. P. BRIGHAM.

A Laboratory Manual of Physical Geography. By Prof. R. S. Tarr and O. D. von Engeln. For use in connection with a general course in physical geography in high and secondary schools and in colleges. xvii and 362 pp. Maps. Macmillan Co., New York, 1911. 9½ x 8.

An examination of this volume brings home anew the sense of profound loss sustained not only by his friends, but by the science of geography, in the death of the senior author. For many years, by his personal instruction and through his text books, he had been leading thousands of American youth into the wealth